APPARATUS AND METHOD FOR LOCAL OSCILLATOR CALIBRATION IN MIXER CIRCUITS

ABSTRACT OF THE DISCLOSURE

An apparatus and method for local oscillator calibration compensates for filter passband variation in a mixer circuit, such as a receiver circuit. The receiver includes at least a mixer circuit and a filter coupled to the output of the mixer. During operation, the mixer mixes an RF input signal with a first local oscillator (LO) signal to frequency translate a selected channel in the RF input signal into the passband of the filter. During a calibration mode, the RF input signal is disabled, and the first LO signal is injected into the filter input by leaking the first LO signal through the mixer circuit. The frequency of the LO signal is then swept over a frequency bandwidth that is sufficiently wide so that the actual passband is detected by measuring the signal amplitude at the output of the bandpass filter, thereby determining any variation in the passband of the filter from the expected passband. Once the actual passband is determined, then the frequency of the first local oscillator signal is adjusted or tuned to compensate for any frequency shift of the actual passband compared to the expected passband. Therefore, the selected channel is up-converted into the center of the actual passband of the bandpass filter and will not fall outside the passband. This enables the passband of the bandpass filter to be narrowed, as compared with conventional receivers that do not utilize this calibration procedure. For example, the bandpass filter can be narrowed to one or two channels wide.